

REMARKS/ARGUMENTS

Basis for the Amendments

The thermoplastic polymer composition of Claim1 is amended to be a thermoplastic polyolefin (TPO) composition. Basis is found in the specification on page 12, lines 12 to 13. No new matter is added.

The thermoplastic polymer of Claim1 is amended to be a polyolefin. Basis is found in the specification on page 11, line 32. No new matter is added.

The elastomer of Claim1 is amended to be a polyolefin elastomer. Basis is found in original Claim 8 and page 14, line 19 of the specification. No new matter is added.

Claim 1 is further amended to include the limitations of original Claim 2. The steps have been renumbered (1) to (9). No new matter is added.

Claim 2 is deleted.

Claim 3 is amended to depend from Claim 1. No new matter is added.

Claim 6 is deleted.

Claim 8 is deleted.

In Claims 9, 10, and 11 the term “substantially linear polyethylene polymer” has been amended to “substantially linear ethylene polymer” to be consistent with the text of the specification. Basis is found on pages 14, line 30 to page 15, line 4. No new matter is added.

Claim Rejections

The Examiner has rejected Claims 1 to 3, 6 to 13, and 15 to 17 under 35 U.S.C. 103(a) as being unpatentable over Betso et al. (US 5,576,374) in view of Sargent (US 5,401,154) and Adedeji et al. (WO 02/43943).

Betso discloses a thermoplastic polymer composition, specifically a thermoplastic polyolefin (TPO), comprising a polypropylene, at least one substantially liner ethylene polymer and/or a linear ethylene polymer, and a non-continuous filler; methods to prepare said compositions; and methods to make articles by a closed-mold process (injection molding) or by extrusion.

Sargent discloses an apparatus comprising an open-mold (compression mold) process for making a fiber reinforced thermoplastic material (polypropylene, nylon, PPO, and PPS are only thermoplastics mentioned, i.e., TPO resins ARE NOT mentioned) and making parts therefrom wherein the apparatus has a first material inlet for the thermoplastic resin, a second material inlet for the fiber reinforcing material which can be a continuous fiber and optionally a third material inlet for a second fiber reinforcing material (Claims 1 and 10 and Figure 1).

Adedeji discloses a method for preparing an article in a closed-mold (injection mold) from a thermoplastic resin (PC, PET, PBT, ABS, ASA, polysulfone, polyphenylene ether (PPE), polyarylsulfide, polyetherimide, polyamide, and copolymers thereof are only thermoplastics mentioned, i.e., TPO resins ARE NOT mentioned) which is extruded and collected in an accumulator prior to injection molding. Further, in addition to the thermoplastic resin, the blends of Adedeji contain one additional component (page 9, lines 17 to 20) which may be another thermoplastic resin. Examples of the additional component are given and do not include a polyolefin, a polyolefin elastomer, or a TPO.

Applicant claims a method of making a fiber-reinforced thermoplastic article in an open-mold process from a fiber-reinforced thermoplastic polyolefin (TPO) composition comprising a polyolefin polymer, a masterbatch comprising a polyolefin elastomer, and continuous fiber. The objective of the present invention is to provide a single process which melt blends a polyolefin polymer with a masterbatch comprising a polyolefin elastomer forming a TPO, combining said TPO with a continuous fiber and fabricating an article in an open-mold process from said fiber-reinforced TPO.

None of the references cited by the Examiner teach or suggest the use of a masterbatch, any masterbatch, let alone the use of a masterbatch comprising an elastomer. The Examiner acknowledges that Betso is silent as to the use of a masterbatch (9/15/09 OA, page 3, 2nd paragraph). Further, Betso is the only reference which discloses a TPO but, does not mention making it by using a masterbatch comprising an elastomer. Neither Sargent nor Adedeji disclose TPO resins or the use of any kind of masterbatch. There is no motivation to combine Sargent and/or Adedeji with Betso, but even if there was, neither Sargent nor Adedeji provides the missing element of Applicant's invention of using a masterbatch.

Further, the Examiner says the following (9/15/09 OA page 5, 3rd paragraph):

“...additional component such as thermoplastic elastomers and stabilizer, colorant, etc. (a masterbatch comprising elastomer) as taught by Adedeji et al. ...”

as evidence/support that Adedeji discloses a masterbatch. Adedeji does not teach the use of a master batch or even adding more than one additional component.

Masterbatch is a well known and well defined plastics compounding component. A masterbatch comprises two or more pre-mixed/pre-compounded materials added to the compounding step (in the present invention the compounding step occurs in an extruder). In other words, a masterbatch is a premixed single component comprising two or more compounds.

To reiterate, Betso does not teach or suggest the use of a masterbatch comprising an elastomer to make its claimed TPO composition, the elastomer is added as a separate component. Sargent does not teach or suggest the use of, or ability to use therein, a masterbatch of any sorts, let alone one comprising an elastomer in its apparatus to make fiber filled non-TPO compositions and articles therefrom. Adedeji discloses that one additional component may be added to the non-TPO resin, there is a list from which the one component is to be selected and masterbatch, let alone a masterbatch comprising an elastomer, is not in the list.

The use of a masterbatch comprising an elastomer is a key element of the present invention and it is not taught or suggested in any of the cited prior art. In other words, it is impossible to combine Betso, Sargent, and Adedeji to arrive at Applicant's method of making a fiber-reinforced thermoplastic article in an open-mold process from a fiber-reinforced TPO composition comprising a polyolefin polymer, a masterbatch comprising a polyolefin elastomer, and continuous fiber.

Further, there are four (4) key elements to Applicant's claimed invention: (1) a TPO made from a polyolefin and a polyolefin elastomer, (2) wherein the polyolefin elastomer is provided in the form of a masterbatch, (3) continuous fibers, and (4) an open-mold process. The following table lists the four key elements of the present invention and indicated which of the elements are taught or suggested by the cited prior art.

	Present Invention	Betso	Sargent	Adedeji
TPO	Yes	Yes	No	No
Continuous Fiber	Yes	No	Yes	No
Masterbatch	Yes	No	No	No
Open-mold Process	Yes	No	Yes	No

Even if the key element of using a masterbatch was taught in Betso, Sargent, and/or Adedeji (which it is not), Applicant asserts that one skilled in the art could still not combine Betso, Sargent, and Adedeji to arrive at the combination of a TPO comprising continuous fibers and an open-mold process of the present invention as claimed.

Adedeji is a method to make articles of a non-continuous fiber filled, non-TPO composition in a closed-mold process. Applicant asserts that there is no motivation or benefit to combine Adedeji with Betso and/or Sargent because it does not teach or disclose any of the key elements of the present invention. In other words, Adedeji is irrelevant as it does not teach or suggest Applicant's TPO, continuous fiber, masterbatch, or an open-mold process.

Betso teaches dry blending the individual components followed by melt blending (col 9, lines 32 to 33). Once melt blended (either from a dry blend of components or adding components individually) Betso's composition is either directly injection molded into a closed mold (there is no such thing as an open-mold injection mold) or the extruded composition is comminuted to pellets which are then injection molded in a separate step. Moreover, Betso not only does not disclose continuous fibers, it teaches away from the use of continuous fibers because continuous fibers (as they are continuous and not particulate) can not be dry blended with other components prior to melt blending. Betso does not teach or suggest (1) a masterbatch (it teaches away from as discussed hereinabove), (2) continuous fibers (it teaches away from as discussed hereinabove), and (3) it is limited to a closed-mold molding process.

Sargent does not teach or suggest a masterbatch of any sort, let alone a masterbatch comprising an elastomer nor does it teach or suggest the use of a TPO in their process. Sargent does however teach an open-mold process and the use of

continuous fiber. The Examiner says it would have been obvious to modify Betso by Sargent (page 5 last paragraph). But what motivation would there be for one skilled in the art to use the continuous fiber of Sargent in Betso's TPO composition when Betso discloses (1) TPO and (2) an open-mold process while Sargent requires (1) a non-TPO in a (2) closed-mold process? The only way to arrive at Applicant's (1) TPO, (2) continuous fiber, and (3) closed-mold process from these two references would be through hindsight, in other words by knowing the elements of Applicant's invention and then picking them, without motivation or reason, from Betso and Sargent.

Applicant asserts that it is impossible to combine Betso, Sargent, and/or Adedeji to arrive at Applicant's method for making a fiber-reinforced thermoplastic article in an open-mold process from a fiber-reinforced thermoplastic polyolefin (TPO) composition comprising a polyolefin polymer, a masterbatch comprising a polyolefin elastomer, and continuous fiber present as claimed in presently amended Claim 1.

CONCLUSIONS

In view of the preceding amendments and remarks, it is believed that all grounds of rejection have been fully traversed and Applicant's amended Claims 1, 3, 9, 10, 11, and 13 and original Claims 7, 12, and 15 to 17 are patentable in full. Accordingly, their reconsideration and allowance at the earliest possible convenience is courteously solicited.

Respectfully submitted,

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